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ABSTRACT

Summarized are presentations made at the University Forum on Competency Based Content in Business, Industry, and Education, planned by the School of Industry and Technology Program Directors of the University of Wisconsin-Stout. The following topics about competency based content are among subjects reported: what competency based content is; who has interest in it; the general, professional, and technical components; examples of content implementation; examples of implementation of competency based content; and future directions or "where do we go from here?" (CS)

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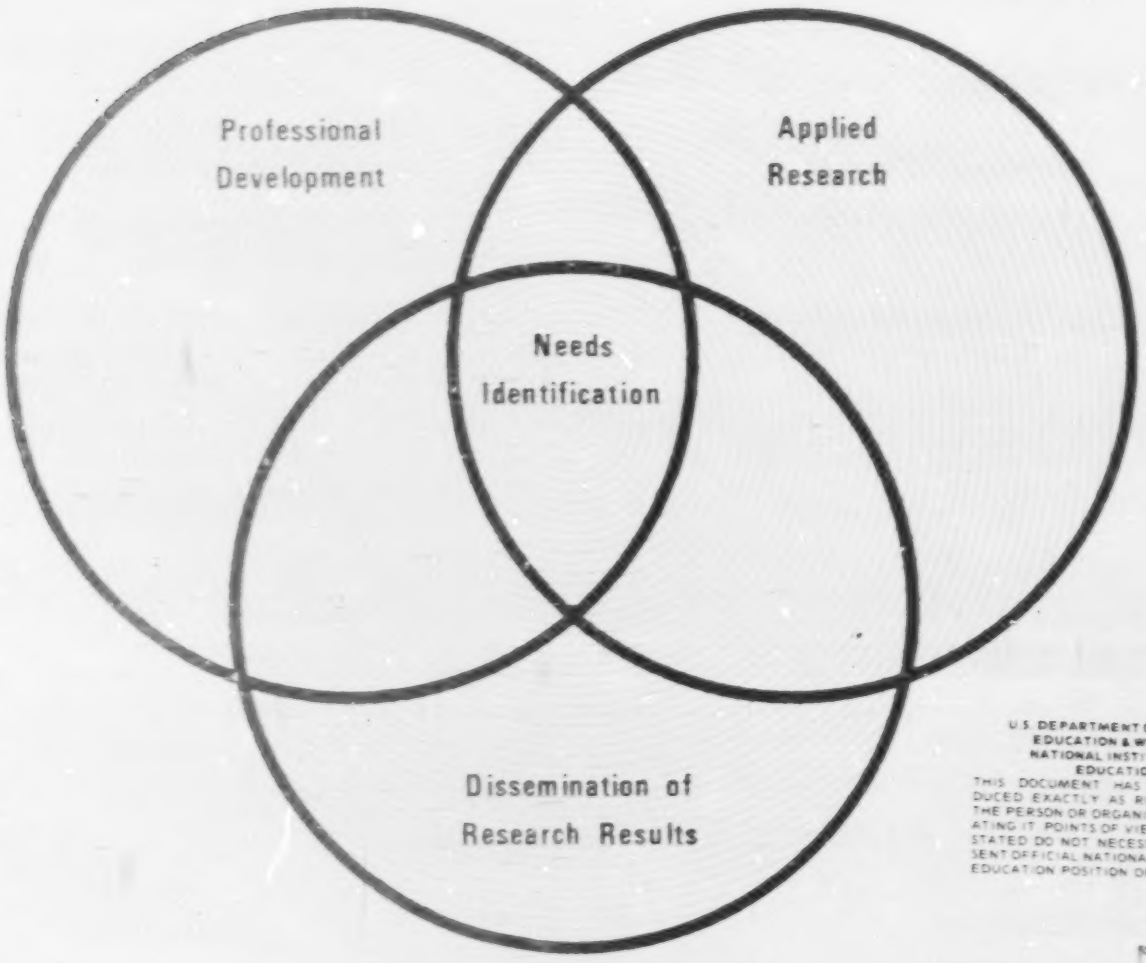

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Center For Vocational, Technical And Adult Education UW-Stout Menomonie, Wisc. (54751)

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Summary Report

Dr. Larry Wright, Editor

University of Wisconsin-Stout

Menomonie, Wisconsin

October 17 and 18, 1973

University Forum
Developing Competency Based Content
in Business, Industry and Education

Summary Report: University Forum - Developing Competency Based Content in Business, Industry and Education, University of Wisconsin - Stout Menomonie, Wisconsin, October 17 and 18, 1973.

Dr. Larry Wright, Editor

The University Forum on Competency Based Content in Business, Industry, and Education was planned by the School of Industry and Technology Program Directors, U.W.-Stout:

Mr. Robert Behling, Program Director, Business Administration, U.W.-Stout

Dr. James Bensen, Undergraduate Program Director, Industrial Arts Education, U.W.-Stout

Dr. Harold Halfin, Graduate M.S. and Ed.S. Program Director, Vocational Education, U.W.-Stout

Dr. Ray Keil, Undergraduate and Graduate Program Director, Industrial Technology, U.W.-Stout

Dr. Philip Ruehl, Undergraduate Program Director, Vocational and Technical Education, U.W.-Stout

Dr. Larry Wright, Graduate Program Director, Industrial Education, U.W.-Stout

Editors Introduction

This conference was conceived in May of 1973 by Dr. James Bensen and your editor as they reflected in the St. Louis Airport about the Associated Organizations for Teacher Education (AOTE) conference on Redesigning Teacher Education, which we had just attended.

The American Council on Industrial Arts Education had sponsored our visit along with eight other participants to the AOTE conference. We were looking for some avenue of evidencing our appreciation to the council, to our University, and to the profession for providing this stimulating experience.

We had both been struck by the need for a forum to consider the competency based approach in more detail, and were of the opinion that to gather a group of people together to consider the topic couldn't wait until the next national meeting of one of our professional associations.

Accordingly, we were delighted when our School of Industry and Technology Department Chairmen and Program Directors Council at Stout agreed to sponsor the event in October. Later, our Center for Vocational, Technical and Adult education agreed to support the writing of this summary report of the Forum.

The following topics about competency based content are among subjects reported in this summary:

1. What is it?
2. Who has interest in it?
3. The general, professional and technical components
4. Examples of content for implementation
5. Implementing competency based content
6. Where do we go from here?

It has been an interesting and professionally rewarding experience to listen to nine hours of audio tapes and to summarize the presentations made. Each speaker was invited to read the preliminary draft of the summary of his remarks and make any changes he might believe appropriate. In our interest in conserving paper, we hope to have preserved the essentials of the presentations made.

Larry Wright, Editor

UW-Stout, November, 1973

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Competency Based Content - What is It?

Dr. Philip Ruehl, Assistant Dean, School of
Industry and Technology, U.W.-Stout

Competency based content is a very logical approach to solving curriculum problems related to content.

The first step to achieving a competency-based program is obviously to identify the content.

Content is selected from a valid and complete list of precisely defined knowledges, skills and attitudes.

Content is derived from a detailed job description and this is the basis for providing educational experiences for a student aspiring to enter a given job.

In a competency based program the competencies required form the base for evaluating instruction.

Competency based content has equal value for industry, business or education in that the starting point is the detailed job description.

In four-year programs there is (1) a professional component, (2) a general studies component and (3) a technical component.

Significantly interwoven with these three components are the human and interpersonal relations.

The required step after job description is analysis - either task or conceptual or both.

Who should do a task analysis? The persons responsible for directing the program. They should include consultants and people on the job in making their analyses.

Three Challenges:

(1) Analysis must include those on the job. It cannot be done in a valid fashion by arm chairs.

(2) The analysis is complete when we have identified the elements. We need to blend and integrate into the whole. We function as individuals and should function as a painter rather than one who paints by numbers.

(3) We must plan for maintenance of the content. How do you keep it up to date? A means must be found and would include on the job experiences, careful observation and continuous evaluation.

Competency Based Content - Who Has Interest in It?

Business and Industry:

Mr. Joseph D. Koch, Manager, Audio-Visual Services,
General Motors Institute, Flint, Michigan

Competency based content. Who has interest in it? No one has interest in it - unless he is interested in (1) what the student must learn (2) when the student has mastered it and (3) how to get the student to an appropriate mastery level.

Those in education, industry, business, sales or service have to be interested in competency-based content because it provides controls. If we are interested in learner output, we must have these controls to produce the output.

Following is the learning needs equation: "MCROCR" plus content = learning. In words, motivation, plus concentration, plus reaction, plus organization, plus comprehension, plus repetition, plus content equals learning.

Content must be accurate, current, fit the environment in which the student will work, flow smoothly and be acceptable to the student. Content must reinforce each of the elements of the equation.

Content must be based on output and output that can be measured. Content controls and gives organization to the education and/or training activity.

My experiences with competency based content include the training of locomotive repairmen who ordinarily handled low tolerance, large heavy equipment to service and repair Titan II Balistic missile guidance equipment which required high tolerance, and was small, delicate equipment. We identified the desired output, furnished competency-based content to guide and control the training and trained toward that end. We were extremely successful.

One of our immediate problems is to prepare all General Motors personnel in the use of the metric system. Knowing the required output, competency can be assured through educational technology.

Who has interest in competency based content? It better be all of us if we are interested in controlling the output learning.

Education:

Dr. Stanley E. Brooks, Professor, State University
College of Buffalo, Buffalo, New York

A national study was undertaken to ascertain who really is involved in competency based teacher education within the field of industrial arts. Each department chairman, head or dean in The Teacher Education Directory received a simple one-page questionnaire. Of the 198 institutions which were contacted, replies were received from 140, or 70 percent.

1. Is your staff currently studying competency based teacher education? 72 yes; 68 no

2. Is your staff engaged in an operational competency based teacher education program? 34 yes; 106 no

3. Where is your primary focus in terms of the implementation? Individual courses - 24; within professional sequency - 25; technical sequence - 18; or general education component - only 3.

4. What is the degree of staff commitment? Total staff - 28; few staff - 30; one staff member - 10

5. How is the competency based teacher education effort focused? Under graduate - 50; graduate level - 2; both - 16

6. What stage of development are you at: Cautiously watching - 12; we are beginning - 48; well along - 8; completed - 3.
Very few people have completed a program that is ready for observation.

7. What professional meetings have your staff attended? ACCTE - 14; ASCD - 9; ATE - 4; AERA - 1; AACTE Clinics - 14.
These meetings featured major programs relating to competency based education. We need to go to these meetings and see what is going on in other disciplines.

8. What degree of agency involvement ought to be part of competency based teacher education?
Associations can be excellent allies. However, some seem unalterably opposed to any assessment or evaluation that might endanger one's tenure. We may want to consider:

    1. What are the competencies required to enter the teaching profession?
    2. What are the competencies required to receive continuing certification?
    3. What are the competencies required to stay in the profession for one's professional life?

Public school industrial arts teachers involvement: none - 10; some - 31; considerable - 9; total involvement - 1

Professional industrial arts association involvement: none - 14; some - 22; considerable - 6; total involvement - 1

Industrial arts college students: none - 5; some - 33; considerable - 14; total involvement - 0

Public school administrators: none - 15; some - 29; considerable - 6; total involvement - 0

Public school guidance personnel: none - 22; some - 14; considerable - 5; total involvement - 0.

Interdisciplinary departments in college: none - 12; some - 16; considerable - 16; total involvement - 3

Lay advisory groups: none - 18; some - 17; considerable - 5; total involvement - 0

State Education Departments: none - 1; some - 5; considerable - 4; total involvement - 0

9. Can you identify a contact person directly involved? yes - 31

10. Are there resources available? yes - 6

Who in education has interest in it? The study found a good deal of interest in competency based content and a few institutions who have some operational programs. (Editor's note: Dr. Brooks indicated a willingness to make more details available to those who requested them from him).

Competency Based Content - Interactive Group Discussions

The following is a brief report of statements made in the eight interactive discussions groups. By the time the last two groups were asked to report, the points they had made had already been presented by other discussion leaders.

Dr. James Herr, Associate Professor,
Graphic Communications Department, UW-Stout

1. In education we leave a lot of things to chance. Competency based education is designed to have things happen on purpose.

2. We, as a profession have much work to do since we are not now in agreement as to what competencies we require of our students.

3. We need to have a mechanism for keeping competencies current and for adding appropriate new ones to the lists.

4. Attendance at professional meetings, reading professional and trade journals, participation in in-service meetings all may contribute to keeping competencies and competency lists updated.

Dr. Art Muller, Associate Professor
Materials and Processes Department, UW-Stout

5. We need to know who determines what the required competencies should be.

6. Once competencies are developed, how can we prevent a break down in their implementation?

7. The competency-based approach may be related to contract education where private agencies agree to meet prescribed performance standards.

Dr. Henry Thomas, Associate Professor
Materials and Processes Department, UW-Stout

8. To determine competencies one must have some source of content in mind and a philosophical base for competency development.

9. Goals in industrial education include both general industrial arts education and more specific technical vocational-industrial education.

10. In looking at what competencies may be required for work-role success, we need to look not only at those who are successful performers but also at those who may have tried but were not successful.

11. To what level do teachers need to have technical competencies? Do teachers need competencies to the industrial work-role performance level?

12. In competency based education are we measuring the obvious to the extreme - to the neglect of the important but less-easy-to-measure competencies?

13. In use of the competency based approach, both the students and the teacher know at all times where they are in relation to the goals to be achieved.

14. There is a danger of leaving out the human part of education in the competency approach since it is difficult to describe and measure.

Dr. James Collier, Associate Professor
Energy and Transportation Department, UW-Stout

15. Some questions include: What is involved in developing a competency based program? What are the implications? What about the feelings of staff? Is it a difficult procedure?

16. What about graduate students who want to transfer from an institution employing a competency based system to a non-competency based institution? How will credits or competencies be evaluated? and, how will they transfer if they will? What will be on the transcript?

17. Is the evaluation system for a competency approach so complex as to preclude success of the approach?

18. It seems obvious that it would take a real commitment of time and resources to develop a competency system.

Mr. Marvin Kufahl, Associate Professor
Materials and Processes Department, UW-Stout

19. Are there special problems of motivation in a competency system?

Mr. Ray Hansen, Instructor
Industrial Management Department, UW-Stout

20. Can a competency based system be developed for general education?

21. What is the climate in secondary education with respect to competency based systems? Are we preparing teachers who will not be able to fit into employment situations that exist?

22. Does the competency based system lend itself to modular scheduling?

23. The next step for each person is to start evolving his instruction toward a competency base.

24. Attainment of competencies possibly will take a period either longer or shorter than the present 4-year programs, depending on individual differences in students and teachers.

25. In the light of the many questions raised about competency based education, perhaps we could take a positive view that it can be accomplished. Each problem raised deserves an answer. There is much room for research and experimentation.

Dr. Tom Baldwin, Assistant Professor
Energy and Transportation Department, UW-Stout

Mr. Stan Johnson, Instructor
Business Administration Department, UW-Stout

Questions raised in these two groups were presented in other groups by those who had already reported.

How May an Administration Support a Competency Based Curriculum?

Dr. Earl Gierke, Curriculum Coordinator
Division of Academic Affairs, UW-Stout

These comments are related to how we in administration at UW-Stout can support competency based education.

Support of the administration is a requisite to an implemented program. Support must be in various forms including encouragement to the faculty and resource allocation. Beyond that it needs a structure. Basic to our structure at UW-Stout is the separation of instruction and program. Programs at Stout are headed by Program Directors who may draw on the instructional resources of the total university as opposed to the traditional approach of programs being operated by departments with somewhat vested interests.

Faculty support is also required. This may come from in-service activities. Program Directors use transdisciplinary committees to identify competencies needed within their programs. The whole question of credits or some other recognition for experiences either on-campus of off-campus is required.

Service unit support is also required through registration, advisement and placement of students.

Support of students is also needed. They seem to be among the more flexible in looking at newer approaches.

Support of the system of which we are a part is also needed. We are now in a state-wide University of Wisconsin system. Some education is needed here to allow this newer approach to competencies to be tried out at the same time reporting our activities in a system to make it compatible with other units in the system.

Another ingredient is the willingness to experiment and the willingness to make a few mistakes.

With these ingredients of administrative support, a competency based approach can be tried and hopefully will be successful in providing more efficiently to meet the needs of our students.

Competency Based Content - The General, Professional and Technical Components.

Dr. Harold Halfin, Director, Center for Vocational, Technical and Adult Education, UW-Stout

Attributes of a competency based teacher education program include:

1. Sharper focus on objectives
2. Individualization of responsibility for learning
3. More attention to individual differences and learning styles
4. Learning more directly related to the objectives
5. Individual assessment and feedback
6. More effective integration of theory and practice
7. More direct relationship between what is taught and what is done on the job
8. Evaluation focused not only on what the learner knows but in how he performs in actual teaching situations
9. Change in the role of the teacher as a facilitator or manager of learning

Attention directed toward the changing role of the teacher

Research on competency based teacher education has been limited to the professional component of what the teacher does. Little attention has

been given to the substantive (or technical) component and little attention has been given to the competencies required for the general component. However, the three must be integrated to provide a comprehensive pre-service competency based program for teacher preparation. To do this we must give attention to role-relevant education.

Role-relevant education involves the identification of the various roles which the teacher performs while on the job as well as the roles which he performs during the hours he is not involved in the teaching act, such as outside the school classroom and outside the school.

The three roles have already been mentioned:

(1) his role as a professional

(2) his role as a master of substantive content

(3) his role as a generally educated member of society

Only when competencies in each of these work-role elements is integrated within the individual can we claim to have had a competency based program.

Competency Based Content - The General, Professional and Technical Components

Dr. Orville Nelson, Research Specialist, Center for Research and Educational Improvement

With the introduction to the role of the teacher as presented by Dr. Halfin, we have developed a model with the learner and the learning environment as the focal point. The competencies to be developed in the teacher should be designed to impinge upon that focal point, Figure 1. The activities of the professional teacher are directed at designing, establishing and maintaining this environment.

The technical competencies may be acquired by formal study and by work experience in business and industry. This may depend upon the level at which one is teaching and the type of institution in which one is working. The professional competencies are used to draw from the technical content in presenting, managing, and evaluating the learning experiences.

General education provides the context, principles and the background which give the individual the resources and the flexibility to be able to explain and to generalize the concepts he is teaching. Note that the arrows indicate the importance of the interaction between these three components.

When the individual performs these three roles on the job, he performs them in an integrated manner.

Look at the second model, Figure 2. The cone in the center illustrates that technical competencies must be performed at least to the application level of the cognitive domain to have an effective teacher. Certainly in many areas the teacher must perform them at higher levels such as analysis,

GENERAL EDUCATION
TECHNICAL
COMPETENCIES
FORMAL
PROFESSIONAL
STUDY
COMPETENCIES
BASIC
DISCIPLINES
Learning Environment
APPLIED
DISCIPLINES
WORK EXPERIENCE IN BUSINESS INDUSTRY

Figure 1

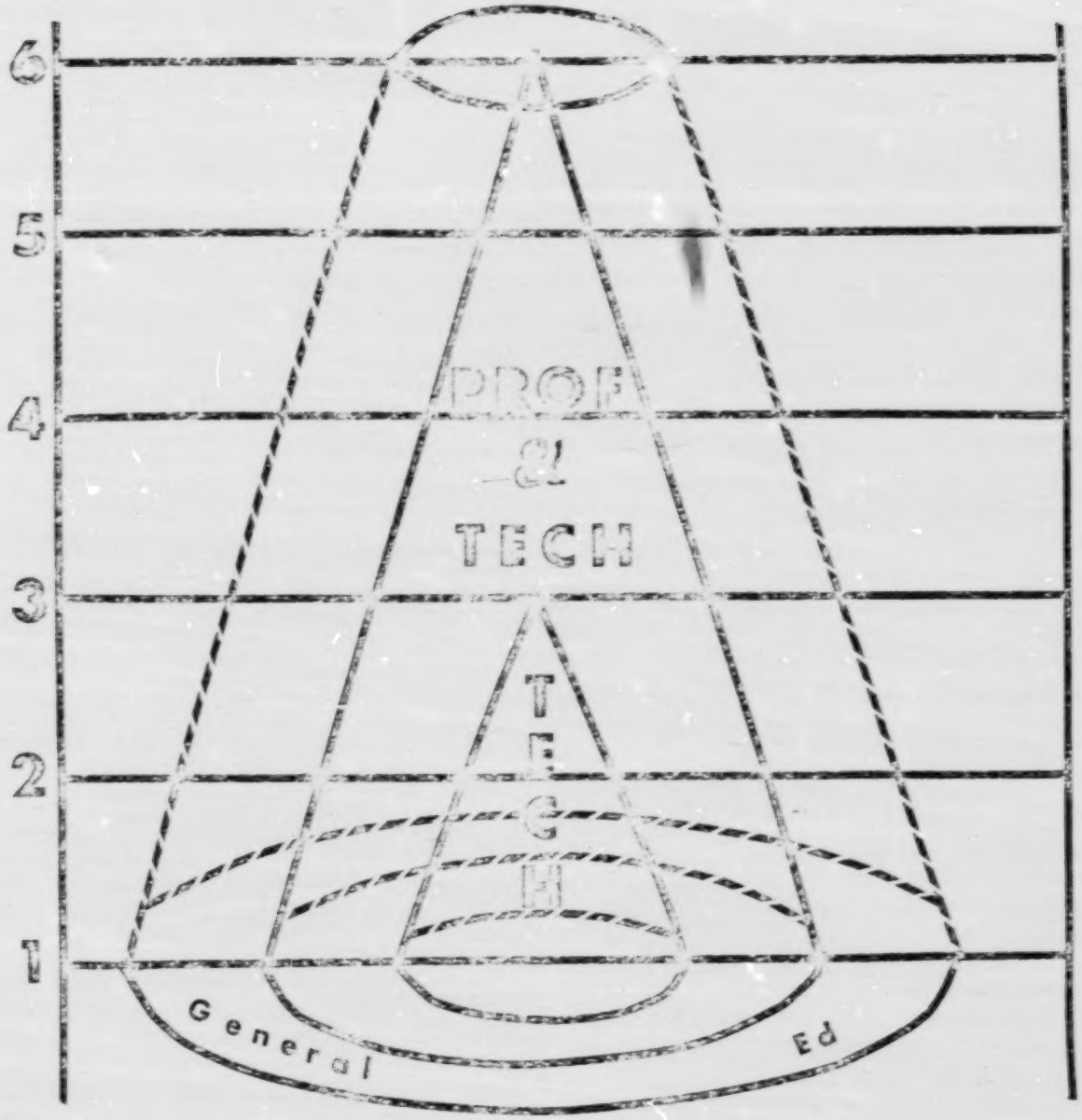


Figure 2

synthesis and evaluation. He must also be able to perform at various levels in the affective and psychomotor domains.

The second cone illustrates that the professional and technical roles function in an integrated manner. This would seem to require analysis, synthesis and evaluation of the discipline, programs and students.

The truncated cone is meant to symbolize the greater flexibility which general education provides. At the synthesizing level the individual will have more knowledge and skills to draw upon. He can develop richer learning experiences and manage the learning environment more effectively. At the evaluation level he has more approaches and techniques to use in evaluating outcomes of programs and students.

Each of these three components, the professional, the general and the technical must be identified and each must be taught so that the individual functions in his teaching role work in an integrated way.

Competency Based Content - Mini Reports on the Professional Component

Business and Industry

Mr. Richard Seitz, Staff Specialist, Management Education,
General Motors Institute, Flint, Michigan

I've heard people question whether competency based instruction is possible. I want to assure you that it is possible to identify content and place it in a competency based format.

The first step as shown on this diagram is to find out the mission of training. That is, what is the student going to do when he or she finishes the training? Only with knowledge of the mission goal for the training is it possible to develop competencies that will bring the goal about.

Typical questions are: What is the mission goal? Who is to perform it? Who says so? What is the student to do upon completion? Based on these questions, one can analyze the tasks into outcomes or accomplishment. With the outcomes in hand, we determine when these outcomes are being met. In other words, what are the standards or the competency level? When we have looked at these questions, then we can turn attention to instructional design objectives and develop instructional strategies.

Our mission at GM is to build a car. To succeed, each job must contribute to the mission. Each job is therefore broken down into its job accomplishments and standards. These form the basis for the competency based content needed to assure that each person assigned to a job will be given training to do the job. We develop mastery and pre-assessment. We must not let the students do over those things in which they are already competent. Students who can meet the mastery objectives of a given course should not have to go through that course.

If one does not have the mastery, we send them through a processing system and this is where we use the competency based content to produce

the mastery to the level required at the output which is an input into the receiving or using system.

Who is going to say what a 7th grader needs to know when he gets out of industrial arts? Nobody seems to know. If this is true, we can't start the instructional design process. We have to identify what he must know when he is finished with the instruction. Only then can relevant systematic, competency based instruction be developed.

Competency based content is control. The student must be able to apply what we are taught. It might be nice to know Mazlows Hierarchy of Needs but the foreman on the job must be able to handle the person who comes on the job in the morning in a drunken condition. Unless we can solve the daily problems with which we are confronted on the job, the instruction is not relevant. The same is true with teachers; if a student kicks the teacher, what does the teacher do? He doesn't recite Mazlow's Hierarchy of Needs to the student.

Another problem is, having found the individual to be competent, one year later he isn't doing what we taught him. Obviously, something has happened to the competency level. We must manage the system so that the personnel in it function the way we want them to. Unless there is a reward for the output on some kind of a continuous basis, we can't expect the desired performances. In many cases, it is more advantageous to make students happy than it is to teach them what they need. New teachers find this out in one hour after entering the classroom. Who has control over the teachers and the environment? The principal? The superintendent? We better find out because unless we have a management system, we can't expect or assure desired output.

Let me give you an example! A big food chain found a problem with the check-out of groceries. If an unmarked item goes by, the cashier rings it up on the basis of what is thought to be the best price. Do we need to teach the cashier how to find out the correct price? No! The cashiers know how. "The customers get mad if I leave to locate a price." If the manager is called to get the correct price, he gets angry. "I am verbally punished if I call him." So, "I found out the behavior is get them through the line." The check-out girl was competent when she finished learning. What happened? The environment didn't support the training! We must set up competency based content and make it work by rewarding for it through management.

We can say we want to set up a competency based system and if we do this through a management system it will happen. It will happen with a minimum of training.

Let me give an example: My job is instructional technologist. I design instruction. I set up a program and ran it through several pilots. It seemed to work exceptionally well. I turn the program over to the teaching staff. Six months later I looked in on a class and I can't recognize the content. It has disappeared. I asked why it wasn't being used, the teacher said, "I can't teach that way." At this point, we will probably decide to replace that teacher because our goal is student competency and we know that the original program design assures us of that. We have found

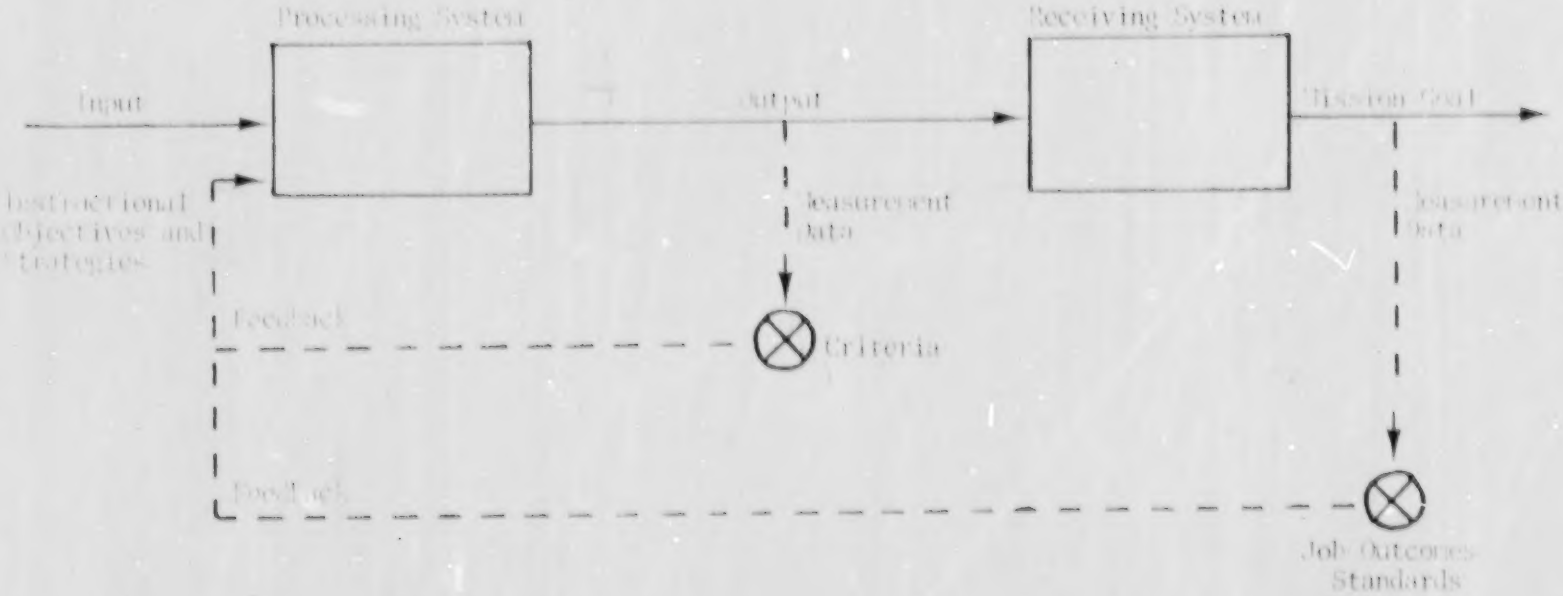


Figure 3

Key Elements Of Our Ideal Training System

that only if we manage the environment of the teachers can we assure continued competency.

There are at least two ways of looking at the training system. The first is: Here are the students, here is the instruction and we count the number that go through without really knowing what they can do. The second identifies what the student should know upon completion, establishes standards and mastery, and certifies those that can perform at the desired output standard. It would seem like the latter is the only system that one can justify and this is the system of competency based content.

Education:

Dr. Franzie Loepp, Assistant Professor
Illinois State University, Normal, Illinois

First, I would like to explain what the Department of Home Economics and Industrial Technology at Illinois State University is doing about competency based education.

All over the country public educators have come under close scrutiny which has resulted in increased efforts to justify their programs. Accountability is the key word. Administrators and instructors are to be accountable to their students. Although no absolutes have been found, a competency based model seems to come closest to being a system that answers the accountability questions.

Accordingly, there is a movement in the United States toward competency based teacher certification. Nine state certification boards are, as of 1973, committed to such a practice, an additional 26 states are in the process of developing competency based certification, all but seven states endorsed the concept.

The Department of Home Economics and Industrial Technology at ISU initiated their Competency Based Instruction (CBI) project in 1972 to design and implement a pre-service teacher education project.

A study of the literature revealed the following common characteristics:

1. A performance model is at the heart of any competency based instructional program. A competency based program is any program in which students receive credit by demonstrating or performing a specific level of competency.

2. CBI is cumulative and achievement is the basis of advancement through the system.

3. CBI implies a different evaluation strategy. Traditionally we evaluate on the basis of average scores and grades. If the student can keep that average above the failing point he or she is said to have passed whether or not competence has been demonstrated in all areas required for success on the job.

4. In a CBI program the student must demonstrate competence in each of the specified competencies.

5. A CBI program allows considerable flexibility. Instructors and curriculum planners must continually adapt to changing conditions in the content base. To add or delete a competency to such a system should be relatively easy. The performance model is particularly suited to analysis by accountability-minded groups.

The definition of competency by our group is: A competency is a complex coordinated behavior that is demonstrated over a given period of time.

Development of such a program requires creativity, inventiveness, stamina, flexibility and a good deal of tough-mindedness.

Dissemination was another element of the project. This was needed to begin to involve those who would use the program and to inform other publics.

The department of Home Economics and Industrial Technology at ISU has selected to study the core of activities that might be common to all or many students in that department.

The advantage to the student is that he progresses as rapidly as he is able. This results in a faster pace for the more highly motivated student.

Faculty members are available to lend guidance and to serve as evaluators; thus, the traditional classroom setting is extensively modified.

"Competencies for Teachers" was developed as a Capstone course for students in the practical arts sequences of our department. This is designed to fill any gaps that may exist in the competence of those students upon completion of the professional sequence taken in the School of Education.

This course consisted of the following cluster-headings:

1. organizing or those activities associated with preparation for instruction.

2. interacting or those activities carried on in the instructional situation.

3. being a professional or those activities relating to the teacher as part of a larger community.

A working conference for the CBI staff bringing in experts from Wayne State University in Detroit helped in the practical matter of formulating competency statements for these clusters.

This course was tried out during eight weeks in the summer of 1973 and has since been revised based on the feedback obtained.

This has opened the door to new and exciting approaches to teacher education in our department at ISU.

The course: Competencies for Teachers replaced the traditional Teaching Methods courses in Industrial Education and Home Economics. With respect to the starting and stopping point for the course, there are some limits because we are using group approaches. It still has the traditional setting of about one semester because we wanted to interact in group situations.

Our definition of competency is more than a behavioral objective. It is a complex coordinated behavior. The purpose of our definition was to avoid the charge of becoming too fragmented in our approach. e.g. A competent swimmer must do these things - 1. breathing, 2. kicking, 3. stroking. Until the student can integrate these three elements he is not a competent swimmer although he may be competent in each of the elements. We need to be extremely careful that we don't teach only the fragments in teacher education. We must provide competencies in the complex coordinated behaviors.

Now I would like to outline (1) essential elements, (2) implied characteristics, and (3) advantages of competency based education as we see them.

I. Essential Elements

A. Competencies are pre-determined in advance of instruction. Competencies cannot be left to the whim of a teacher. Competency based instruction is so powerful that it must be related to the performances required when students go out into their profession.

B. The student must be told in advance of the instruction what competencies he is going to be expected to master.

C. Competencies must be written in performance terms and be measurable.

D. Students must be told in advance what the criteria for success in mastering the competency will be. Tell the students how they are going to be evaluated. Even in the knowledge competencies, students must perform something so we can infer knowledge.

E. The criteria must be based on the competencies to be developed and be explicitly stated. When you are asked to write a paper on a topic with the assumption that it will be evaluated on the content but instead you are actually evaluated on English and format, the teacher was not telling you how it would be evaluated. If the student knows evaluation will be on both content and form in advance of the assignment, the teacher has kept the faith and the student will not achieve mastery until he has demonstrated his ability in both content and form.

F. Rate of progress is determined by demonstrated performance.

II. Implied Characteristics:

A. Instruction is individualized and personalized. Remember, this is not an "essential", learning activities can be group oriented.

B. Learning is guided by feedback (almost instantaneous)

C. The program as a whole is systematic. The parts must be inter-related.

D. Emphasis is on exit. Although pre-assessment is involved, we are concerned that he can perform when mastery has been certified.

E. The student is held accountable for performance.

III. Advantages

A. Achievement. If one knows exactly what must be done, he may be able to attain a higher level of performance.

B. Accountability. Both student and teacher are accountable.

C. Humanization. Advantage of knowledge of goals is that we treat students like people and they respond better.

D. Individualization. Some students can go through faster. Those having trouble can get more attention and this really does happen.

E. Motivation. Just putting the real goal out there seems to be motivating.

Competency Based Content - The Technical Component

Content Organizers in the 1960's

Dr. Larry Wright, Graduate Program Director
Industrial Education, UW-Stout

The purpose of these remarks is to review what the innovative industrial education programs of the 1960's may suggest by way of content organizers. Traditionally we have use organizers like woods, metals, drafting, auto mechanics and the like.

As a point of departure look at Figure 4. This comes from the Schmitt and Pelley, U.S. Office of Education study published in 1966 but for the year of 1962-63. The names of the clusters are shown along with classes offered in the United States in thousands. The content organizers are familiar. It may be noted that there is a gap of nearly 20,000 classes between power mechanics and ceramics. Thus, these organizers seem to fall

Figure 4

CONTENT ORGANIZERS - 1960's

	Classes in 1,000's
General Industrial Arts	56.1
General Woods	44.2
Drafting	39.6
General Metals	28.9
Note Gap →	
Graphic Arts	9.6
Electricity Electronics	8.8
Crafts	7.8
Power Mechanics	5.5
Note Gap →	
Ceramics	.9
Plastics	.4
Other	.3
Home Mechanics	.2
Photography	.2
Transportation	.2
Industrial Arts, Math and Science	.1
Textiles	.1

into three levels of frequency of class offerings ranging from most frequent to least frequent and we can get a perception of what was used as content organizers in the early 1960s.

To contrast the early 1960s with the late 1960s (or early 1970s) we can look at content organizers used in several of the innovative programs of that period. Fifteen as identified in Figure 5 were chosen for this review.

Now, look at the frequency of mention of various content organizers which were used within these fifteen innovative programs, Figure 6.

The reason for some frequencies being higher than the number of innovative programs is that while each of these content organizers was used, some others that were nearly the same were grouped under those shown. Your speaker did this somewhat arbitrarily but not capriciously hoping not to do any real dis-service to the intent of the innovators.

The following conclusions seem reasonable:

1. The traditional organizers simply do not appear in the innovative programs (and maybe this is one reason the programs were innovative).

2. This may suggest that there was (and probably is) dissatisfaction with the traditional content organizers.

3. The technical content base for industrial arts is much broader than we thought some fifteen years ago.

4. As we consider competency based content for the technical component of the industrial arts teachers pre-service and in-service preparation, we need to be certain to consider this broader base. Especially for the pre-service prospective teacher, with his whole professional life ahead of him, he needs to be competent in operationalizing the content organizers reflecting this broader content base.

Examples of Content for Implementation of Competency Based Instruction

Dr. Dean Hauenstein, Associate Professor, Division, Vocational and Technical Education, Florida International University, Miami, Florida

Characteristics and Conditions

Implementing competency based programs may be somewhat easier to do in a new institution such as ours than in an institution of long standing. One criterion for employment was a commitment to the performance-based concept of education.

In Florida the state legislature has strongly urged the development of competency based teacher education programs by 1975.

Figure 5

FIFTEEN INNOVATIVE PROGRAMS OF THE 1960's
RELATED TO INDUSTRIAL ARTS

AMERICAN INDUSTRY (UW-Stout, Drs. Face and Flug)

CENTRAL MICHIGAN PARTNERSHIP PROGRAM (Central Michigan University, Dr. Minelli)

CURRICULUM TO REFLECT INDUSTRY AND TECHNOLOGY (University of Maine, Dr. Mitchell)

EDUCATION FOR A PRODUCTIVE SOCIETY (University of Alberta, Dr. Ziel)

ENTERPRISE: MAN AND TECHNOLOGY (Southern Illinois University, Dr. Stadt)

FUNCTIONS OF INDUSTRY (Wayne State University, Drs. Bateson and Stern)

GALAXY PLAN (Detroit, Michigan, Mr. Turnquist)

GEORGIA SOUTHERN COLLEGE APPROACH (Georgia Southern College, Dr. Hackett)

INDUSTRIAL ARTS (Washington, D.C. - AVA)

INDUSTRIAL ARTS AS TECHNOLOGY (North Carolina University, Dr. Olson)

INDUSTRIAL ARTS CURRICULUM PROJECT (Ohio State University, Drs. Lux and Ray)

INDUSTRIOLOGY (UW-Platteville, Dr. Kirby)

MAN AND TECHNOLOGY (West Virginia University, Dr. DeVore)

MARYLAND PLAN (University of Maryland, Dr. Maley)

ORCHESTRATED SYSTEMS APPROACH (Indiana State University, Dr. Yoho)

Figure 6

CONTENT ORGANIZERS FOUND IN THE FIFTEEN INNOVATIVE PROGRAMS OF THE 1960's

Organization and Management f = 22

Energy and Transportation f = 19

Industry f = 18

Production f = 15

Materials and Processes f = 13

Servicing f = 11

Manufacturing f = 11

Construction f = 9

Graphic Communication f = 9

Research f = 9

Crafts f = 2

Occupations f = 2

Computer Technology f = 1

Mechanical Technology f = 1

Mechanization f = 1

Personal Services f = 1

Property f = 1

Procurement f = 1

Purchasing f = 1

Characteristics of a competency based curricula include:

1. A behavioral body of knowledge

2. Pre-specified competencies including (A) the name of the act, (B) the conditions under which it is performed, (C) standard for performance

3. Multiple training options

4. Criterion referenced assessment

5. Feedback from performance

Conditions for implementation include (1) a legal framework established, (2) competencies are specified, (3) training program established, (4) monitoring and feedback system.

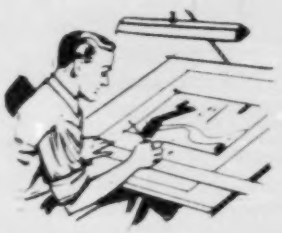
Priorities

Decisions have to be made on what to teach, how to teach it, and how you know when its been learned. For industrial arts teacher education priorities have to be assigned to the following.

1. What to teach - (curriculum). This is determined by an analysis for a field of human activity within an industrial and educational system; their goals, processes and content

2. How to teach it - (instruction). This is determined by the factors of:

   competencies to be mastered
   facilities and equipment
   time
   cost
   student ability
   safety regulations
   and other factors



3. When has it been learned - (evaluation). This is determined by comparing exit behaviors to pre-specified performance criteria.

It is absolutely essential to avoid curriculum fragmentation and to provide instruction which integrates professional and technical knowledge, skills and attitudes.

Systems Approach

A system can be defined as the collective entities or parts of a whole and their relationships. Education is concerned with relationship of educational activity to all other activity in the social system through an educational system.

One might look at the five social institutions of man: family,

religious, political, educational and economic. We are preparing teachers who can relate to one or all of these institutions. Figure 7 shows by grade level some relationships of purposes and outcomes that might be reflected in a teacher education program.

The industrial arts body of knowledge is related most closely to the economic institution and the prevocational and pretechnical educational school programs.

The model in Figure 8 presents an educational system. This represents the work that must be done to implement a performance based teacher education program.

Identification of Technical Competencies

The question becomes (for industrial arts), "How does one identify technical competencies and content?"

Using the example of manufacturing in Figure 9, manufacturing is the change in the form of materials in a plant to satisfy human wants for material goods. The processes of how manufacturing does this provides a base for the identification of competencies (note the list under the Process heading). These are our competencies as derived from the manufacturing goal in the economic institution. The content is what one needs to know about certain principles, theories, and the like to achieve competence. (See elements listed under the heading of content).

Technical content is identified by utilizing the development model. See Figure 10. A universe and its goal are first identified (as in the case of manufacturing). Next, identify the processes (steps) which achieve the goal. These are called modules. Next, select a module which now becomes a sub universe with a goal. The module processes are tasks the students will do. Next, for each of the tasks identify what one needs to know to be able to do the task. These are the content (knowledges and attitudes) that permit successful performance of the tasks.

Identification of Professional Competencies

In our institution the divisions in the School of Education agreed first to develop a core of common competencies for all teachers. Three basic courses were developed: a foundations course of schooling knowledge; a teaching skills course, (how to give a presentation, a demonstration, ask questions, obtain closure and the like); and a human relations course, (how to deal with ethnic problems, cultural differences, problems and differences in how people communicate, and handling discipline problems). These three are knowledge and practice courses. Students come face-to-face with teaching problems and try their hand at it. Additional teaching competencies for each discipline were identified by each division of the school. These learning experiences provide application through field experiences.

Individualized Instruction

Class attendance is not mandatory. Students work as per Figure 11.

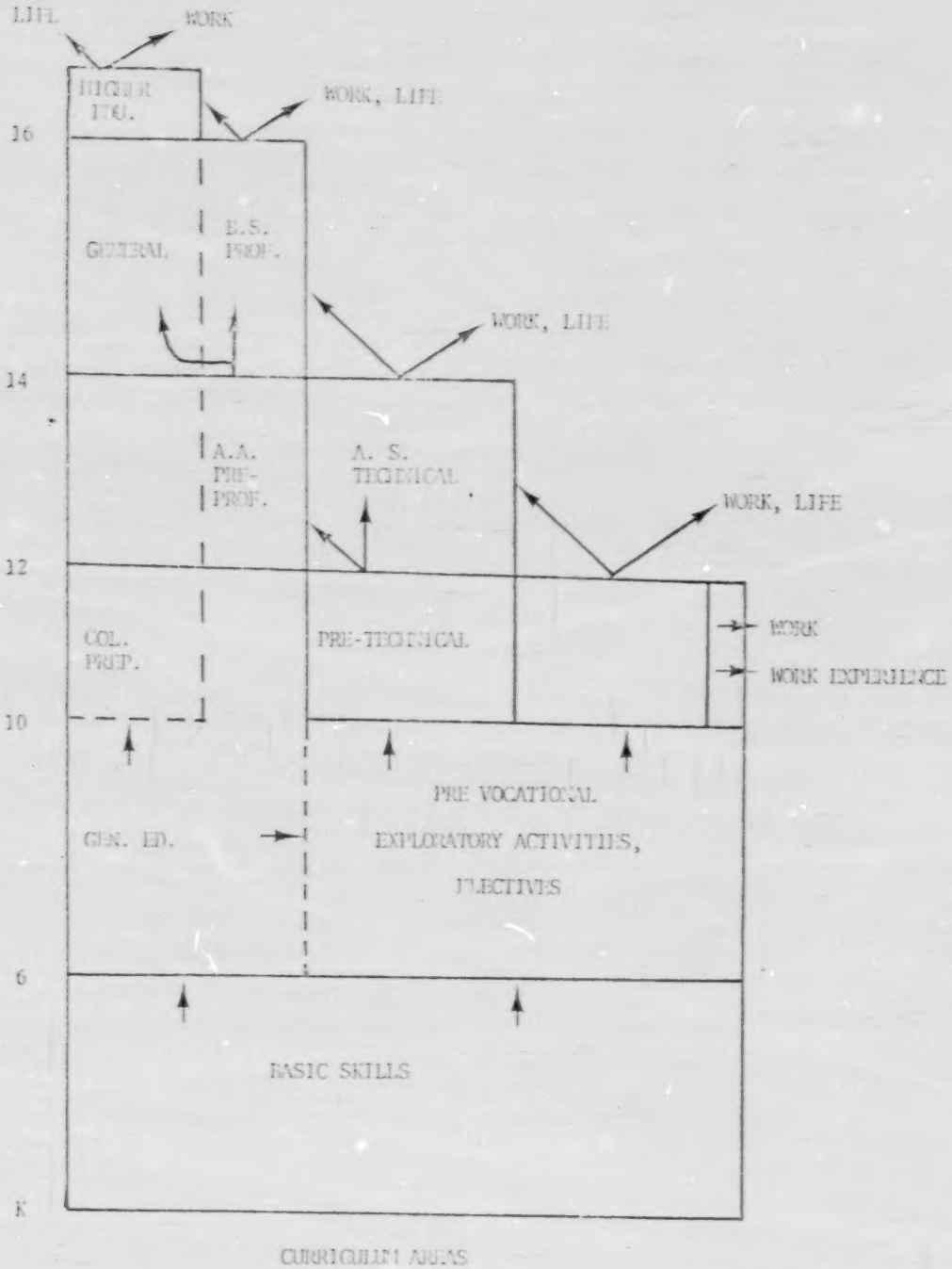


Figure 7

Diagram of School Programs

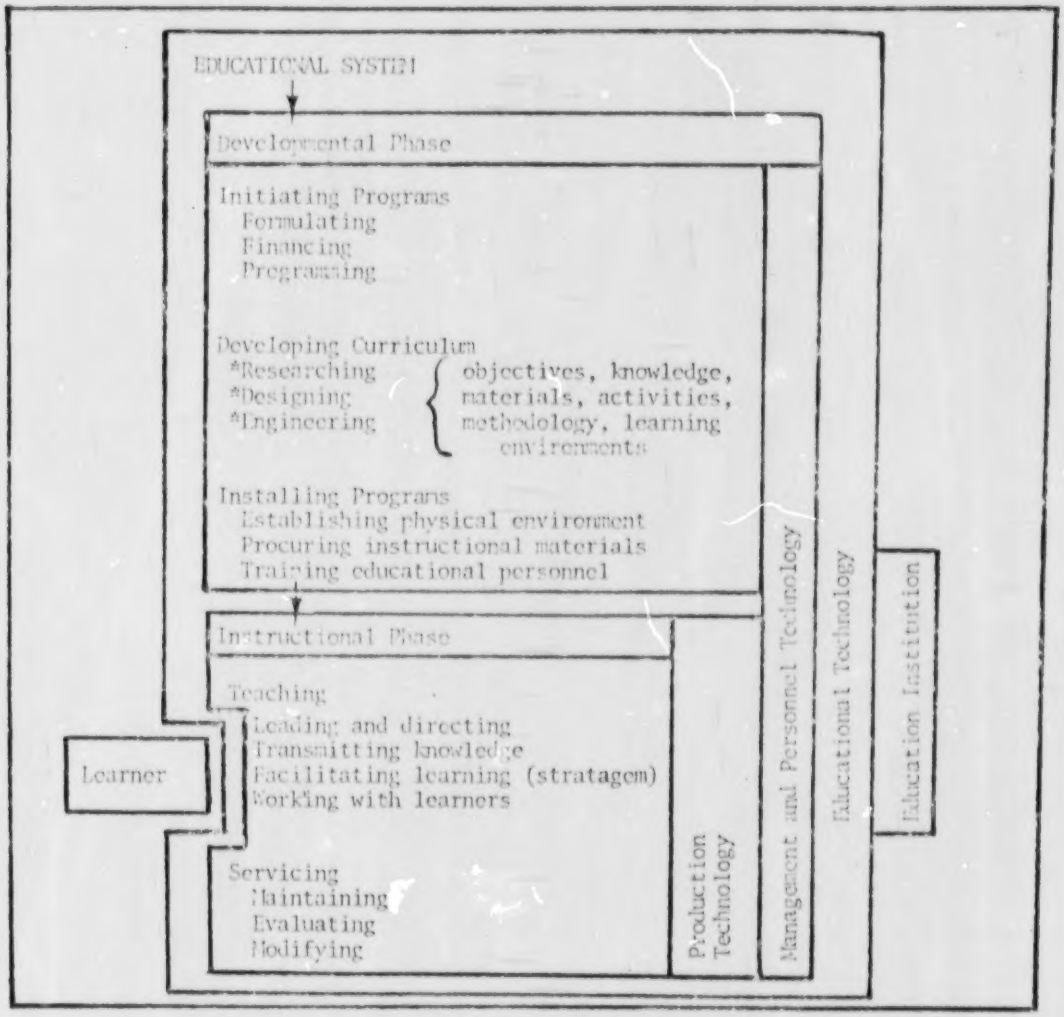

EDUCATIONAL SYSTEM
Developmental Phase
Initiating Programs
Formulating
Financing
Programming
Developing Curriculum
*Researching
*Designing
*Engineering
objectives, knowledge, materials, activities, methodology, learning environments
Installing Programs
Establishing physical environment
Procuring instructional materials
Training educational personnel
Instructional Phase
Teaching
Leading and directing
Transmitting knowledge
Facilitating learning (stratagem)
Working with learners
Learner
Servicing
Maintaining
Evaluating
Modifying
Production Technology
Management and Personnel Technology
Educational Technology
Education Institution

Figure 8

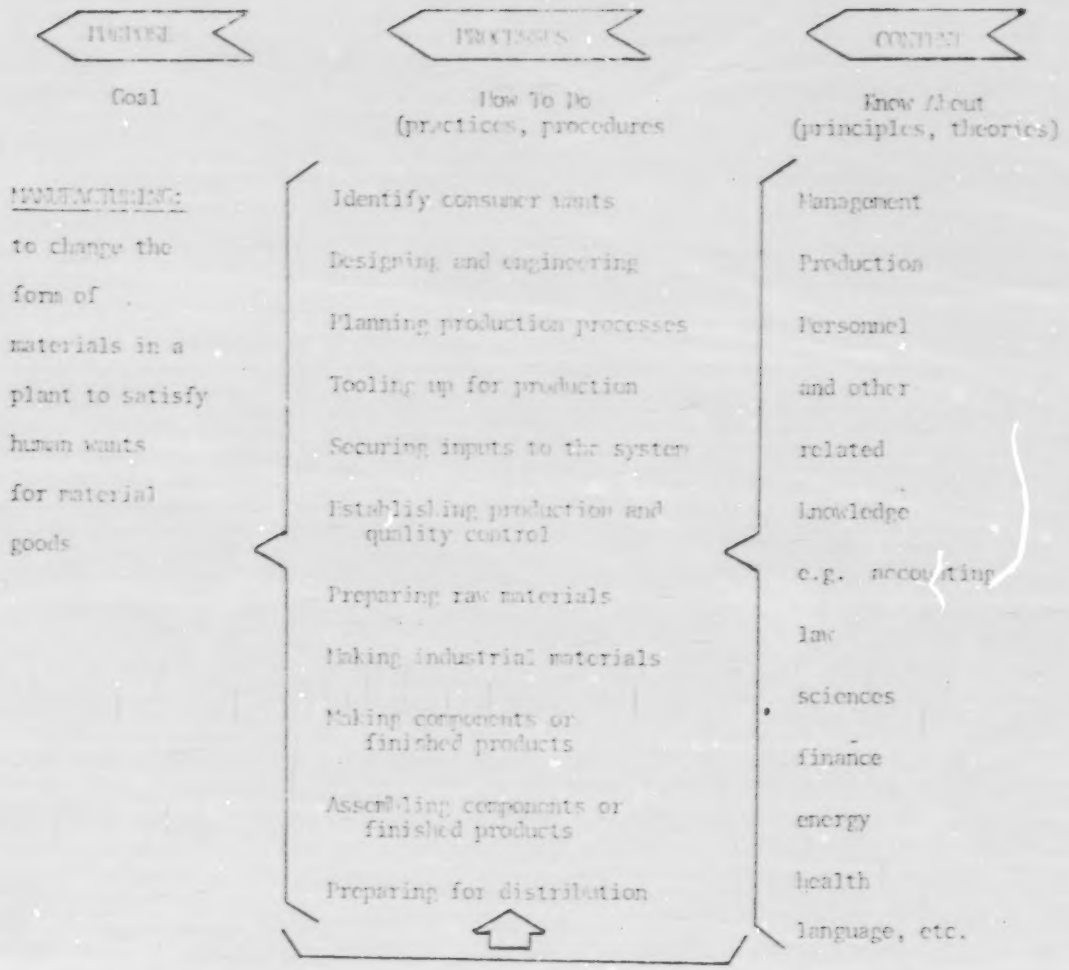

Goal
How To Do
(practices, procedures
Know About
(principles, theories)
to change the
form of
materials in a
plant to satisfy
human wants
for material
goods
Identify consumer wants
Designing and engineering
Planning production processes
Tooling up for production
Securing inputs to the system
Establishing production and quality control
Preparing raw materials
Making industrial materials
Making components or finished products
Assembling components or finished products
Preparing for distribution
Management
Production
Personnel
and other
related
knowledge
e.g. accounting
law
sciences
finance
energy
health
language, etc.
Course Framework (modules, tasks)
Industrial Arts Subject Matter

Figure 9

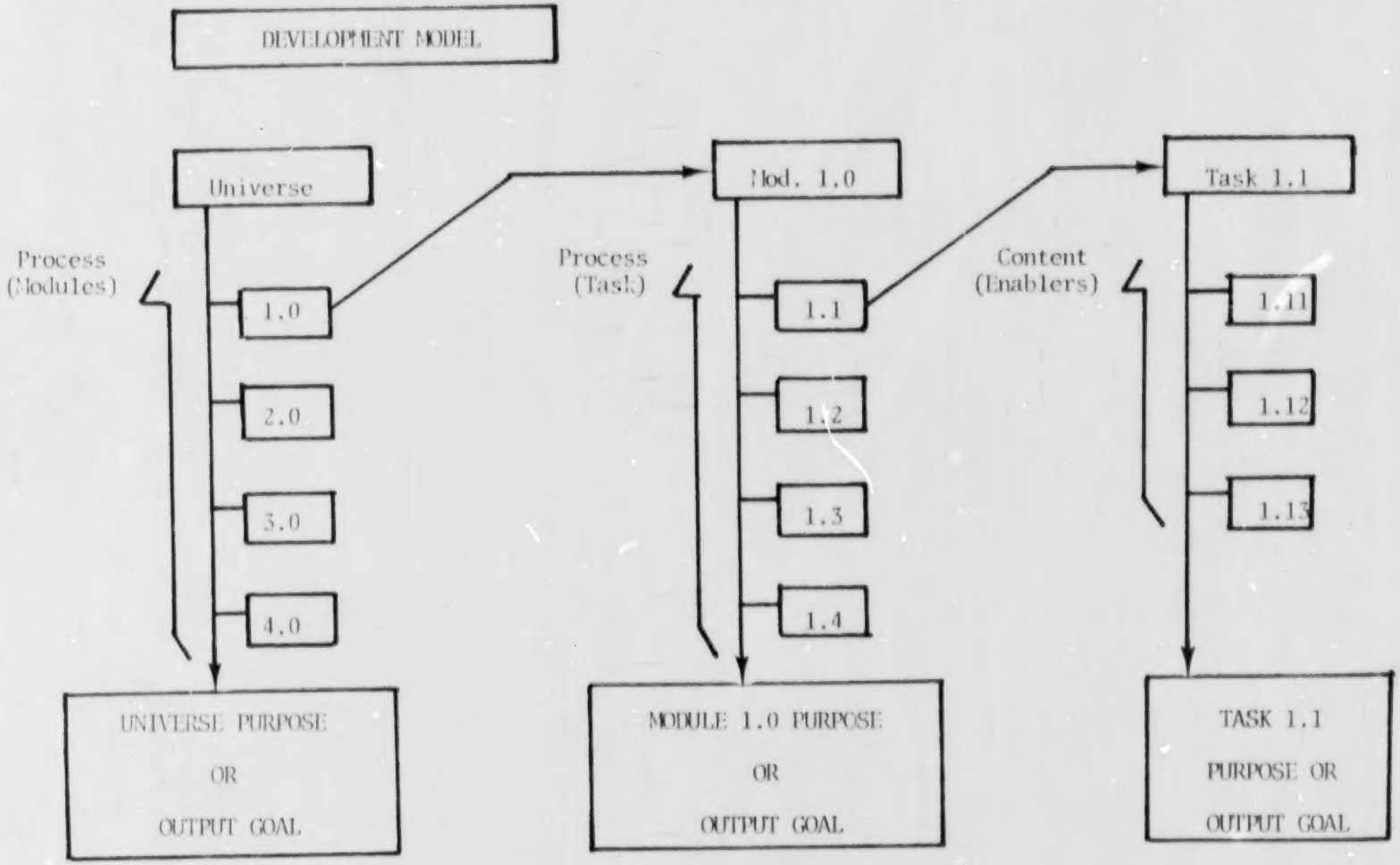

DEVELOPMENT MODEL
Universe
Process
(Modules)
1.0
2.0
3.0
4.0
UNIVERSE PURPOSE
OR
OUTPUT GOAL
Mod. 1.0
Process
(Task)
1.1
1.2
1.3
1.4
MODULE 1.0 PURPOSE
OR
OUTPUT GOAL
Task 1.1
Content
(Enablers)
1.11
1.12
1.13
TASK 1.1
PURPOSE OR
OUTPUT GOAL

Figure 10

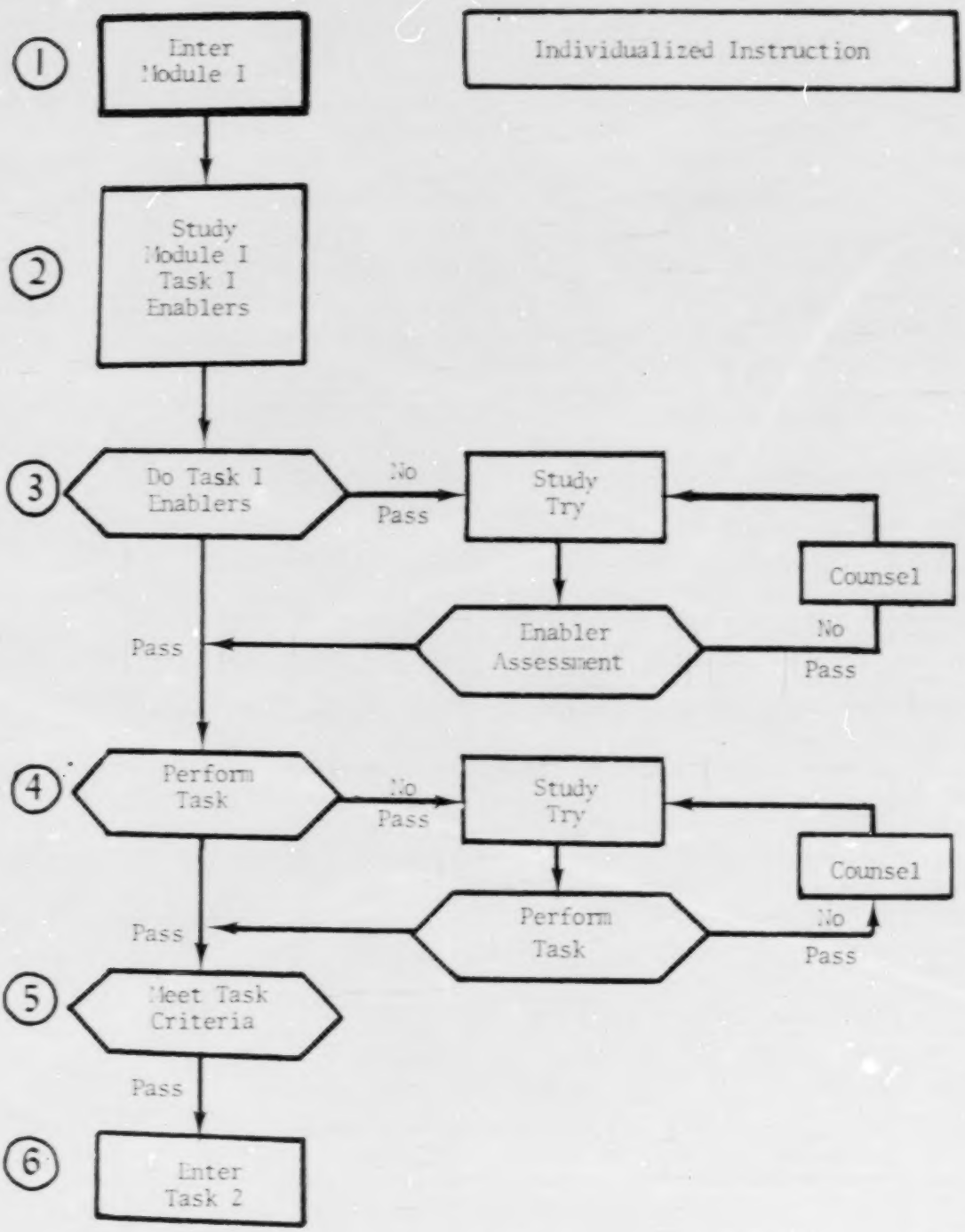

Individualized Instruction
1
Enter Module I
2
Study Module I Task I Enablers
3
Do Task I Enablers
No
Pass
Study Try
Counsel
Enabler Assessment
No
Pass
Pass
4
Perform Task
No
Pass
Study Try
Counsel
Perform Task
No
Pass
Pass
5
Meet Task Criteria
Pass
6
Enter Task 2

Figure 11

A student must achieve what is required for each module. If successful, he proceeds to the next module. If he does not achieve the level of competence as specified he is counseled and he tries again. Grades are in terms of: credit, no credit and honors credit. Students focus on learning and achievement, not grades. This motivates students. A typical classroom may at times have only two or three people in it or they may all be there.

The credit system is shown in Figure 12.

Implementing Competency Based Content

Business and Industry

Mr. Joseph D. Koch, Manager, Audio-Visual Services
General Motors Institute, Flint, Michigan
Mr. Richard Seitz, Staff Specialist, Management Education
General Motors Institute, Flint, Michigan

In the area of competency based education it's really satisfying when we see someone doing something - even though the system is not complete or perfect. It is significant to analyze what others have done but it may be more significant to involve one's self in a competency based content project. Through this kind of involvement we obtain the most. We suggest you try competency based education, you'll like it and so will the learner.

To do this you will need management on your side. If management doesn't care, the chances are that you will be less likely to succeed. You need to sell this concept. You need to take this message to public school administrators so that these concepts can be implemented in our schools across the country.

Management training programs need to become competency based and this has been very difficult to sell. The difficulty that holds it back to the greatest degree is that its hard work and not as rewarding as we might wish.

Implementation can only start by first implementing a proper reward system. Management must say: "This is our goal." This is equally true for teachers. The administration must say competency based instruction is our goal. Until this is done we will flounder around individually as we have in the past.

General Motors in converting to the metric system. The first steps in implementing a system is to decide that "we want to do it" and set the goals. The second thing is to set up the system to accomplish the goal. An organizational plan to implement the project must be developed. Standards must be set.

Assignment of responsibilities and identifications of the training must be done. Then choose the media to be used. Many times this wrongly

Figure 12

CREDIT SYSTEM

The Division of Vocational, Technical and Adult Education, at Florida International University, is using the following designations for recognition of performance:

CR - Credit:	Awarded when a student meets the criteria specified for the course within the enrollment quarter.
NC - No Credit:	Recorded at end of enrollment quarter when criteria for the course has not been met. When the criteria are met, NC will be changed to CR.
HCR - Honors Credit:	Awarded for quality performance beyond the specified criteria for CR Credit during the enrollment quarter.

becomes the paramount decision at the expense of the really necessary decisions and actions.

One of the problems in competency based instruction is that the teachers are all tooled up for lectures and demonstrations. They don't know how to facilitate learning. They need help. And, to be successful in the implementation phase this help must be forth coming in the organization and planning phases The system must be switched over to become student and learner based. This is very threatening to instructors. They need help because it is different. They may sabotage it if the help is not there. Traditional educators need to use a repertoire of methods not just lecture or a certain method because they feel secure with it. The method must meet the output need in the learning environment.

Some of our systems engineers can make tremendous contributions to our instructional training programs when they have been given competencies in education, training and learning theory, to supplement what they already know about the systems concept.

We must adopt the best from many professions and technologies if we are to come up to speed in the learning technology.

Implementing Competency Based Content

The Technical Component

Dr. Franzie Loepp, Assistant Professor
Illinois State University, Normal, Illinois

I want to re-enforce the importance of enlisting the support of the administrators.

There are more types of reward than finance, although finance is an important one to reward. A comment, a smile, a letter - these things go a long way. If we expect to have others become involved in implementing competency based instruction, we must use these and other reward techniques.

What are we doing at ISU in implementing technical content on a comp base?

Step one is to describe "what is". We found we really didn't have a good description of each of the courses in the department.

We then compare "what is" to the "essential elements" described earlier. This will give some indication of how close "what is" is to the competency base model.

Then we will look to what "should be." To accomplish this we are developing a hierarchy or model in each of the areas in the department. We are following up our graduates, we are questioning those that employ our graduates. We are establishing advisory committees to try to find out what is happening in education and industry.

When we describe what is, identify what should be, then the discrepancy is what needs to be changed.

We believe no one would pay attention unless we tried to "practice what we preach." In the technical curriculum we began with 125 students taking "materials and processing" and turned this core course into a competency base course. We have all 125 together for two 50 minute periods each week. Then we have five groups of 25 for four hours per week in a laboratory setting. With this class we found that one gets to a competency based system in stages. It can't happen to an on going program over night.

First, we made a big commitment. We decided that as a first step, when the student walked into lecture or lab, they would get measurable objectives for each session, including how they would be evaluated. Then we used immediate feedback. Those who were not successful knew when they could come in for extra lab work and when and where they could be re-tested.

This gives the teacher a strong positive feeling of hope that students will pass successfully. You work on your lectures and use media and gimmicks because the teacher is inconvenienced if the student didn't learn it the first time.

The Educational Component

Dr. Stanley Brooks, Professor, State
University College of Buffalo, Buffalo, New York

The Bureau of Education of the State of New York has been continuing its work on how to improve teacher education. They developed a master plan for Higher Education, Section one deals with "Preparing Professionals for Elementary and Secondary Education: Modifying Preparation and Practice."

Certification in the state is designed to provide assurance to the people of the state that professional personnel in the schools possess and maintain demonstrated competence to enable children to learn.

In making a review of what exists, it was found that little change was being made and that there were several categories of dissatisfaction then in existence:

1. Preparation is too exclusively a college responsibility.
2. Preparation is expected to be completed before service begins.
3. Decisions about certification are remote from the candidate.
4. Collegiate preparation programs usually consist of common experiences for all students.
5. Credentials are interpreted as statements of competence.
6. Preparation programs evidence little selectivity.

Four process standards -

1. Teacher certification programs must be planned, developed, monitored and evaluated by cooperating agencies acting as a policy board. Policy boards include:

   Public Schools involved in employment of our students and in the preparation of our teachers
   Public school representatives approved by the boards of education
   Institutions of higher education
   Teachers' representatives
   Students in the program

2. Cooperating agencies must by their actions address the following questions:

   - What are the stated priorities and objectives of the school?
   - What competencies should a teacher have to serve in those schools?

3. Cooperating agencies must specify the evidence, once the priorities and objectives of the schools are identified and the competencies needed to meet these objectives, then we must cooperatively state the evidence and the manner in which we will accept it so that we will know when a prospective teacher has reached that level of competence.

   A. evidence will be shown that in the development of objectives consideration has been given to insure that the teacher is an educated person

   B. insure that the teacher is proficient in the subject in which certification is to be granted.

   C. must insure that the prospective teacher is capable of working with children in ways that will enhance learning

   D. individualized opportunities must be provided for the learner

   E. explicit criteria are required

4. A management system must be developed for the following purposes:

   A. to provide continuous data so we know at what stage of development each student is as he progresses through the program

   B. provide data on inter-relation of program components to further determine the accountability for each aspect of the program and to serve as the basis for program evaluation

Our time table says that by 1975 our teacher education programs will be competency based. Pupil performance will be the ultimate judge of teacher

competence.

Teacher's organizations tend to be against this on the basis that it can't be measured but we have been mandated to move in this direction and to find ways to measure.

Competency Based Content - Where Do We Go From Here?

Discussion leader: Dr. Philip Ruehl, Assistant Dean
School of Industry and Technology, UW-Stout

Our organization at UW-Stout is such that Program Directors are responsible for degree programs while Department Chairmen are responsible for staffing and instruction. The Program Director and his trans-disciplinary committee identify competencies they want developed in their majors. The Program Directors ask Department Chairmen to provide these competencies through instruction. Traditionally we have not been able to offer instruction unless a large enough group of students has been in need of it to make a class. Probably the competency approach offers promise of additional ways of meeting the needs of smaller groups for specialized competency development.

As an administrator, these observations of what has been said seem especially significant:

1. We better learn how to reward staff.

2. We need to develop a strategy for continuing the competency development that has been started and find ways to accelerate its rate.

3. We need to encourage the further implementation of your organization of program directors and department chairmen to contribute to our continuing development of curriculum and instruction. We may need a new curriculum model for this.

4. We need to alert our administration and our student services division to the problems of organization to accommodate a competency based system.

In introducing our department chairmen, who are our panelists, let me suggest three questions toward which they may wish to address themselves in part:

1. Is anything being done in your department in the area of competency based education now? What is its status?

2. Do you see any spots in your department where competency based instruction could be developed yet this year? If so, where?

3. What would you like to see done next in implementing competency based instruction at UW-Stout?

Dr. William Amthor, Chairman, Department of Graphic Communication, UW-Stout

We do not have any courses organized on a competency base in our department now. We have had interest in a pass-fail system in some of our drafting courses. Students earning C's or D's may not really be competent in all aspects of the discipline represented in a course. The mechanics of our present system are not set up for competency based instruction. However, we are able to give students alternatives of selecting the pass-fail system over the present grade and credit system.

This semester we are continuing the development of a course called Communications for all students entering industrial and technical education. We believe that there are elements in this course that might quite readily be packaged. Moreover, in some of our more advanced classes with smaller numbers of students we also have content that might be packaged or identified as potential competency based content which then might attract additional numbers to the instruction - or part of it.

With respect to what we would like to see done next at UW-Stout, probably we need to look at what the administrative structures are that will be needed to implement competency based instruction. Program Directors may ask for it but we have to have some identifiable means of delivering the goods.

Dr. John Entorf, Chairman, Department of Materials and Processes, UW-Stout

We in materials and processes have two courses that have features approaching competency based instruction: metallurgy and numerical control. Both were generated within the last few years. Each course was based on behavioral objectives so each has already identified the behaviors that we expect students will experience and hopefully internalize. The means of evaluation are based on these behaviors. Courses like this lend themselves quite well to competency based instruction. So, in our department, we have many courses that may be especially appropriate to convert to a competency base. Courses such as welding and machine shop and others dealing with either processes or materials fall in this category.

Our students use varied means of obtaining learning experiences. In plastics they tend to design their own projects and then construct them. In welding there are quite a few exercises used to develop the needed competencies. We also use some mass production experiences in some of our classes.

Dr. Robert Rudiger, Chairman, Department of Industrial Teacher Education, UW-Stout

The large number of students we need to service provides us with some

unique problems in our department. Among these is the problem of coordination of staff and course content. In order to solve this, we must first decide on which competencies to provide. Jobs, as they exist out there now do not require the same competencies that will be needed in the future. We must prepare for the future - yet the initial employment must be successful now. Ratings of beginning teachers are obviously made on the basis of how they fit into the system they are entering.

In order to better provide performance based instruction, our department has been making a study of the professional component of the industrial education teacher's tasks. Presently our next step is to inventory our courses to see to what extent they may already be providing for the professional competencies and to identify any areas of competencies that are needed but are not now being provided. Four members of our staff have two credits of released time planned for this spring to make this study. We are also involved in terms of the future with examining within our university Teacher Education Council the professional competencies that may be common across disciplines.

Mr. Paul Menges, Acting Chairman, Department of Business Administration, UW-Stout

Our department mission is to prepare managers for business and industry. We see our courses in accounting as those now developing competencies. The evaluation of whether they can pass their Certified Public Accounting exams is the performance criterion. We have one accounting course which is individualized and this may lend itself to the competency approach.

With respect to where we could go into competency based instruction, it would be our management courses.

Mr. Zenon Smolarek, Instructor, Department of Industrial Management, UW-Stout

Our department provides many service courses to other schools of the university. We have been having difficulty in finding out from the program directors whose majors we service and what the competencies are that they want us to provide. This is more a problem in the affective than in the cognitive domain.

In manufacturing engineering we have a professional semester for seniors. They have eight hours of class, per day for a full semester for 16 credits. We have tried individualized instruction but have not been able to free the time of staff menbers sufficiently to be really comfortable with it. In this case, the instructor belongs to the class from 8 to 4 every day. It has been quite possible to be available to the class and to individualize the instruction. What we need to do now is to more clearly specify in writing the competencies to be developed within this professional semester.

Dr. Jack Sampson, Chairman, Department
of Energy and Power, UW-Stout

A driver training program is a good example of competency based instruction. When the young people come to be examined we know whether they have the competencies when the examination is over. There is a reflection on the training program for those who may not have demonstrated the competencies required.

In the technical areas we have one course using individual packages and others on the way. In auto mechanics we have a committee who has completed a very extensive task analysis for the field of mechanics. This could easily be a base from which to identify competencies in a program for mechanics.

What do we need and where do we go from here?

Department chairmen need from program directors their identification of the tasks that their majors must perform to be successful on the job.

Another need is an emphasis on what activities must our graduates perform and at what level must these be performed. This certainly includes activities or competencies from each of the components of general education, professional education and the component we are most interested in today, technical education.

We, as department chairmen, must design instructional offerings which will provide the competencies requested by program directors.

We will need to develop some very flexible instructional systems including open entry. If students have competencies we must find that out and let them progress from what they can already do.

Possibly our entire university will need to become an instructional bank. We have many instructional units and persons will need to come to our instructional bank and select and pay for those units that they need to develop their personal array of competencies to the level which will permit degree completion as well as success on the job, whether the job be in business, industry or education. Obviously students would only need to develop competencies in those areas where they did not already possess them. Accordingly, some students would have more and some considerably less units to complete before exiting with the needed competency level from the program.

This obviously puts the teacher in an entirely new role. The teacher becomes more of a resource person making diagnoses, giving prescriptions, providing assistance and making evaluations. He will need other support personnel to do this effectively including media specialists, instructional technologists and probably others in differentiated staffing roles.

We need to work with administrators since it will require financial support to operate these programs.

A futuristic assessment is going to be a vital part of a competency based program.

University Forum Summary

Dr. James Bensen, Undergraduate Program Director,
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Paint by numbers, and thereby being unable to paint the whole picture without the numbers, was used several times as an analogy that we need continuous effort to be certain that we are not fragmenting education. Rather, in competency based education, we must define the elements and provide for their integration into the person's whole being. This point was made repeatedly during our forum and is surely among the significant points to remember.

If we break out technical components, professional components, general components and the like, these are only useful for the sake of identification of competencies to be developed. In real life our experiences are in unity. The person goes out as a person. He is not a professional person, or a technical person or a general person - he is a coordinated unitized person.

Another point that has been made is that if you go the competency based route, it permits the use of different educational delivery systems. It encourages one to look to different systems and select learning activities that appear most appropriate. We must not get so enamoured by competency identification that we overlook the human aspect.

We need descriptions of all the competencies that a specified occupation dictates. We think it may be easier to do so with job oriented types of competencies. Culturally and societally oriented outputs may be tougher to define but they deserve equal importance so we must attack the whole problem.

Competency based instructional systems provide one with controls. This is certainly true with the input-output model. It is quite visible what the results are between pre-assessment and post assessment. We can be held accountable and we can hold students accountable.

Although there was a variety of terms used throughout this forum, it has been very evident that we have been talking about the same things. Some of the systems had the lines drawn in different ways; some of the levels had different descriptions; but, there was a marvelous overlay of what this was all about.

Vince Lombardi was a competency man. He demanded competency - or you didn't play. We as educators need to look at our instruction in the same way. If our students aren't learning, probably we haven't been teaching. Lombardi would say: "Unless the learning is taking place, you're off the team."

Selected Significant References

1. American Association of Colleges for Teacher Education, Suite #610, One Dupont Circle, N.W. Washington, D.C. 20036 has papers on Performanced-Based Teacher Education. Number 7 in the series is an Annotated Bibliography.

2. Educational Technology, Educational Technology Publications, Inc., 140 Sylvan Avenue, Englewood Cliffs, New Jersey 07632 devoted the entire issue of November 1972 to "Competency-Based Education".

3. Journal of Teacher Education, AACTE, One Dupont Circle, N.W., Washington, D.C., 20036 devoted the entire issue of Fall, 1973 to "Performanced-Based Teacher Education."

4. Phi Delta Kappan, January, 1974, Phi Delta Kappa, Inc., 8th and Union, Bloomington, Indiana, 47401, devoted the entire issue to competency or performance based teacher education.